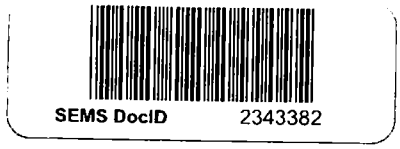
FINAL



Sampling QA/QC Work Plan
Removal Assessment

Weirton BOP Implosion Site
Weirton, Hancock County, West Virginia

DCN: 03088-5-01-IN-1082
TDD No: T501-19-11-001
Contract No.: EP-S3-15-03
January 23, 2020

TechLaw

EPA Region III
START V - West
Superfund Technical Assessment and Response Team

Submitted to: Deborah Lindsey, On-Scene Coordinator
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Sampling QA/QC Work Plan
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Prepared for:

U.S. Environmental Protection Agency
Region III
Philadelphia, PA

EPA Contract No.:	EP-S3-15-03
TDD No.:	T501-19-11-001
EPA Work Assigner:	Deborah Lindsey, On-Scene Coordinator
Date Prepared:	January 23, 2020
Prepared by:	TechLaw

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1.0 INTRODUCTION

TechLaw was tasked by the U.S. Environmental Protection Agency (EPA), Region III to conduct a Removal Assessment at the Weirton BOP Site, located in Weirton, Hancock County, West Virginia. EPA tasked TechLaw to conduct sampling activities at the Site in order to evaluate if there is a potential threat to nearby populations from particulate deposition associated with the March 9, 2019 implosion of the Basic Oxygen Plant at the Frontier, Mingo Junction Steel Works, LLC property in Weirton, WV.

This Sampling QA/QC Work Plan (SQAP) provides procedures and protocols for collecting surface soil samples. Sampling is anticipated to be conducted in the mixed residential and commercial areas located north and east of the former BOP facility and where plume deposition reportedly occurred from a large cloud of dust that was caused by the BOP implosion event. The samples will undergo laboratory analyses for inorganic and asbestos chemical parameters which includes parameters of concern previously identified in documentation associated with the implosion site. The investigation activities will be conducted under EPA Superfund Technical Assessment and Response Team (START) – West contract EP-S3-15-03, Technical Direction Document (TDD) No. T501-19-11-001.

2.0 SITE DESCRIPTION

The Site is the location of the former Basic Oxygen Plant (BOP) at the Frontier, Mingo Junction Steel Works, LLC property located in Weirton, WV. Prior to its implosion, the BOP was a large structure situated on a 16.4-acre parcel of land that was located approximately 1000 feet south-southeast from the intersection of WV State Route 2 (SR2) and Pennsylvania Avenue (SR105) in Weirton, WV. The BOP location is bound to the north by Terrace Circle, to the east by residential homes along Weir Avenue, to the south by the Steel Works facility, and to the west by SR2. Coordinates for the approximate center of the BOP facility are 40.414848 north latitude and -80.587102 west longitude (Google Earth Pro© - refer to Figure 1, Site Location Map).

On March 9, 2019, the final phase of the BOP demolition project was conducted by the owner who had the remaining structure demolished by means of a scheduled implosion. The implosion caused a large dust cloud and resulted in deposition of particulate matter on nearby residential and commercial properties. An evaluation of these off-site properties is the primary objective of this work plan. The BOP location and the approximate investigation area is depicted in Figure 2, Site Aerial Map. The area to be evaluated consists primarily of residential properties and some mixed-use commercial properties located adjacent to and north and east of the BOP, and which is along and in the vicinity of Weir Avenue and Pennsylvania Avenue.

The former BOP facility is located on a broad, relatively flat valley floor that was a former channel of the Ohio River. The investigation area is upslope from the BOP facility and approximately 25-

100 feet higher elevation. The elevation of the valley floor is approximately 730 feet above mean sea level (amsl). The upland areas bounding the east and west sides of the valley are approximately 1170 feet amsl. Steeply sloped stream-dissected hillsides are present throughout the area and are indicative of the topography of the Allegheny Plateau zone of the Appalachian Plateau region.

3.0 BACKGROUND

The basic oxygen steel making (BOS, BOP, BOF, or OSM) process is a method of primary steel-making where carbon-rich pig iron is made into steel. The process of blowing oxygen through the pig iron lowers the carbon content within the iron and changes it to low-carbon steel. The process is known as basic, from the fluxes of burnt lime or dolomite chemical bases, which are added to aid with the removal of impurities and protect the converter lining.

Refer to the *Preliminary Investigation Report Corrective Action Area VI Iron-Making And Corrective Action Area VII Steel-Making,* (Preliminary Investigation Report) prepared by *Civil and Environmental Consultants, Inc.* (CEC) for a presentation of historical Site ownership and previous investigations of the Site. TechLaw was unable to review the CEC report figures for reference in locating solid waste management units (SWMUs) and areas of concern (AOCs) reported within the CEC Preliminary Investigation Report as they were not made available with the report for the background investigation. SWMUs identified in the Preliminary Investigation Report include the former yard office locomotive fueling station (W-700), detinning plant (W-1000,1002, and 1007), sludge transfer station (W-1000), and air compressor condensate drip at detinning plant (W-1007).

Weirton Steel Corporation (WSC) received an initial administrative order, on September 16, 1996, under section 3008(h) of the Resource Conservation and Recovery Act (RCRA) from EPA to perform RCRA corrective actions at WSC's steel manufacturing facility located in Weirton, WV. The order became final on October 16, 1996 and specified that WSC perform a RCRA Facility Investigation (RFI). Following several revised submissions, WSC submitted a facility-wide RFI Work Plan to EPA that was approved on July 20, 1999. The RFI Work Plan divided the large complex site (1,390 acres) into 12 Corrective Action Areas (CAAs) to implement the RFI and corrective actions.

The Weirton Basic Oxygen Plant (BOP) was operated by WSC prior to May 17, 2004 when International Steel Group, Inc. (ISG) purchased the majority of WSC's assets including the parcels that made up CAA VI (Iron-Making Area) and VII (Steel-Making Area) which included the BOP. Operations began at the facility on May 18, 2004 under the name of ISG Weirton, Inc., as a subsidiary of ISG. In April 2005, Mittal Steel N.V. (Mittal) acquired ISG. In 2006, Mittal merged with Arcelor to form ArcelorMittal, Inc. From 2006 to 2012, the facility was operated by ArcelorMittal Weirton, Inc., a subsidiary of ArcelorMittal USA, Inc. On December 31, 2012,

ArcelorMittal Weirton, Inc. converted to a limited liability company and the name was changed to ArcelorMittal Weirton LLC (CEC 2015).

The RFI Work Plan for CAAs VI and VII was submitted to the U.S. EPA on June 26, 2013. A revised work plan was approved by EPA on September 19, 2013. CEC conducted field investigations from October to December 2013. A total of 17 soil borings (SBs) were installed in CAAs VI and VII. One SB was installed in CAA VI. Sixteen SBs were installed in CAA VII. A total of 9 groundwater monitoring wells (GMWs) were installed in CAAs VI and VII. Three GMWs were installed in CAA VI; six GMWs were installed in CAA VII.

CEC indicated that the constituents of potential concern (COPCs), related to the (SWMUs and AOCs identified in the Preliminary Investigation Report, include volatile organic compounds (VOCs), primarily monocyclic aromatic hydrocarbons and halogenated aliphatics; semi-volatile organic compounds (SVOCs), primarily phenols and polynuclear aromatic hydrocarbons (PAHs); polychlorinated biphenyl (PCBs); metals; and cyanide (CEC 2015). Results from the preliminary investigation were compared with the residential and industrial EPA Regional Screening Levels (RSLs) that were current at the time of the CEC report (January 2015).

Surface soil samples collected as part of the CEC Preliminary Site Investigation conducted in 2015 were analyzed for select VOCs and SVOCs, including 17 (PAHs) and target analyte list (TAL) metals plus cyanide, and PCBs. Analytical results indicated there were no VOCs detected in surface soil samples that exceeded the residential RSLs for soils.

The BOP building is located in CAA VII as indicated in the CEC Preliminary Investigation Report. The CEC Preliminary Investigation Report indicates at least seven surface soil sample locations are identified associated with the BOP building area. The sample identifiers (IDs) are VII-SS-11, 12, 13, 18, 19, 20 and 21. These sample locations are described in Table 5-1 of the CEC Preliminary Investigation Report.

For the 7 surface soil locations called out in the CEC Preliminary Investigation report as being in the area of the BOP building, located in Table 5-1. The COCs of greatest concern are PAHs and metals including:

- Benzo(a)anthracene with detections ranging from 0.013 milligrams per kilogram (mg/kg) to 0.17 mg/kg. Two of the seven samples exceed the residential soil RSL of 0.15 mg/kg;
- Benzo(a)pyrene with detections ranging from 0.0082 mg/kg to 0.18 mg/kg. Six of the seven samples exceed the residential soil RSL of 0.015 mg/kg;
- Benzo(b)flouranthene with detections ranging from 0.013 mg/kg to 0.2 mg/kg. Two of the seven samples exceeds the residential soil RSL of 0.15 mg/kg;

- Dibenz(a,h)anthracene with detections ranging from 0.0081 mg/kg to 0.052 mg/kg. Three of the seven samples exceed the residential soil RSL of 0.015 mg/kg;

- Arsenic with detections ranging from 0.75 mg/kg to 5.6 mg/kg. Six of the six samples (SVII-SS-18 was not sampled for TAL metals) exceed the residential soil RSL of 0.67. Four of the six samples exceed the industrial soil RSL of 3 mg/kg.

A detailed description of RCRA sampling activities and analytical results can be found in the CEC Preliminary Investigation Report. .

More recent activity showed that the BOP parcel was sold to Frontier Industrial Corporation in January 2017. During 2017-2018, an asbestos survey and removal was conducted at the BOP. On June 9, 2018, BOP demolition and teardown began. On March 9, 2019, remaining Sections 14, 15, and 16 of the BOP were demolished via implosion. The implosion caused a large dust cloud that resulted in deposition of particulate matter on nearby residential and commercial properties. On March 11, 2019, a sample of the dust material deposited from the implosion was collected by a chemist and analyzed by an offsite commercial laboratory for inductively coupled plasma-atomic emission spectrometry (ICP-AES) metals, mercury and hexavalent chromium. The results indicated the presence of arsenic, cadmium, lead, and mercury within the dust sample at concentrations of potential concern. On July 10, 2019, a lawsuit was filed in Hancock County Court representing residents of 23 households in Weirton due to hazards and property damage resulting from the implosion. The West Virginia Department of Environmental Protection (WVDEP) subsequently requested EPA assistance with evaluating surface soils on nearby properties for contaminants of concern related to the implosion.

4.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

EPA On-Scene Coordinator (OSC) Deborah Lindsey will provide overall direction to TechLaw staff concerning project sampling requirements, objectives, and schedule. The START Site Leader is the primary point of contact with the EPA OSC. The Site Leader is responsible for the development and completion of the SQAP, project team organization, and supervision of all project tasks, including reports and deliverables. The following TechLaw personnel will work on this project:

Personnel	Responsibility
Non-responsive based on revised scope	Site Leader
Non-responsive based on revised scope	Quality Assurance Coordinator (QAC)
To be determined (TBD)	Sampling/screening activities

5.0 PROJECT DESCRIPTION

5.1 Objectives

The primary objectives of this sampling event are as follows:

- Sample surface soils on residential and mixed-use commercial properties where particulate deposition occurred as a result of the BOP implosion.
- Characterize total metals, mercury, hexavalent chromium and asbestos concentrations in surface soil samples.

5.2 Scope of Work

The scope of work includes collecting biased surface soil samples from 0-3 inch depth from approximately 20 locations and submitting the samples for offsite laboratory analysis. Samples will be collected from properties where EPA has received access to sample from the property owner. Analytical parameters are presented in Section 7.

6.0 DATA USE OBJECTIVES

The following data quality objectives (DQOs) apply to this project:

Program Area	Sampling Objective	Data Type
Removal Assessment	Characterize surface soil to determine the presence and level of contamination	Definitive

The analytical data for total metals analysis for surface soil will be compared to EPA Regional Screening Levels (RSLs) for residential and industrial Soil (EPA, 2019a) and EPA Removal Management Levels (RMLs) for Residential and Industrial Soil (EPA, 2019b). Consistent with EPA Region 3 screening procedures, the RSL table considers a 1E-06 cancer risk and target hazard quotient (THQ) of 0.1 to account for chemicals that may have additive effects. The RML table considers a 1E-04 cancer risk and a THQ of 1.0.

7.0 SAMPLING APPROACH AND ANALYTICAL PARAMETERS

The following table presents a list of areas to be sampled, sample matrices, analytical parameters, and analytical methods.

Area	Matrix	Parameters	Method(s)
Off-site residential/ commercial properties near BOP, and background locations	Surface Soil	CLP ICP-AES TAL Metals + Hg	CLP SOW ISM02.4 or equivalent
		Hexavalent Chromium	SW846 3060A (digestion)/ EPA 7199 or equivalent
		Asbestos	(EPA 600/5/93/116)

Laboratory services will be requested through the EPA Region 3 Office of Analytical Services and Quality Assurance (OASQA) Client Services Team (CST). It is anticipated that analytical services will be provided through the Contract Laboratory Program (CLP) or the EPA Region 3 OASQA Laboratory. If Tier IV analytical services are required, TechLaw will procure the services.

7.1 Sampling Design/Analytical Methodology for Surface Soil

TechLaw will conduct sampling activities as described below in off-site areas/locations as depicted in Figure 3 – Sample Location Map. TechLaw will conduct surface soil sampling at locations identified by EPA and as determined during a Site-reconnaissance trip conducted by EPA and TechLaw on November 26, 2019. The locations are/will be selected based upon proximity to the implosion area and obtaining owner permission for property access. Three proposed background sampling locations have also been identified at locations estimated to be outside of the primary area affected by the implosion dust cloud.

The sampling procedure includes preparation of the ground surface by physically removing vegetation, stones and debris as much as practical. Surface soil will be collected from approximately 0 - 3 inches depth using a dedicated stainless steel trowel or a dedicated plastic scoop and placed into a dedicated aluminum pan. The soil will be homogenized in the aluminum pan prior to placing in sample containers and vegetation, rocks and debris physically removed as much as practical. The homogenized soil will then be placed in certified-clean sample containers, marked with the sample ID, date, time and sampler, and stored on ice at 4° C until receipt by the assigned laboratory(s). The depth and description of the sample at each location will be documented in the Site logbook.

An estimated 25 samples including field duplicate samples will be submitted for laboratory analysis. Analytical parameters for surface soil samples are listed in the table in Section 7.0 above. Refer to Table 1 (attached) for a summary of field and quality control (QC) samples, analytical parameters, and methods. Sample containers, holding times, and preservation requirements are presented in Table 2.

7.2 Sample Location and Sample Number Identifiers

Sample location identifiers are assigned by the sampling team to geographic points typically identified by longitude and latitude coordinates or other defined descriptive or spatial reference from where samples will be collected (e.g. groundwater well, a home or structure, etc.). Sample number identifiers (e.g. sample ID, sample #, etc.) are unique identifiers assigned to the samples collected from sample locations at each project. A sample may have more than one unique identifier. For instance, CLP or DAS numbers will be assigned in accordance with EPA guidance when using CLP or DAS laboratories.

The sampling team additionally assigns their own Sample ID in accordance with the approved sampling plan. Location and sample identifiers to be assigned under this project are further discussed below.

7.2.1 Sample Location Identifiers

Sample locations will be assigned by the sampling team sequentially in the order they are collected. The sample identifier format will be as follows:

X-## where:

X =	"P" for Property or parcel
	"B" for Background location
## =	Sequential number
Z =	QC blank location (e.g. trip blank, rinsate blank, field blank, etc.)

The first surface soil sample location will be identified as P-01.

7.2.2 CLP Samples

Samples to be analyzed by CLP laboratories will be assigned CLP sample numbers. The CLP sample numbers will be automatically assigned by the SCRIBE™ software. The sample number format will be as follows:

MC#### where:

MC =	indicates that the sample is to be analyzed under a CLP inorganics Statement of Work (SOW)
C =	indicates that the sample is to be analyzed under a CLP organics SOW
#### =	alpha-numeric that will be sequentially assigned as the sample data are entered into the SCRIBE™ program

7.2.3 DAS Sample Numbers

Samples to be analyzed by OASQA-assigned Delivery of Analytical Services (DAS) laboratories will be assigned a DAS sample number. The numbers will be manually assigned by the Team Leader in the SCRIBE® software. The sample number format will be as follows:

Rxxxxx-yy where;

Rxxxxx = indicates the DAS project code; and

yy = indicates the sequential number of the sampling location

Alternatively, a SCRIBE sample number may be used as the DAS sample number.

7.2.4 Sample Number Identifiers Assigned by the Sampling Team

Sample Identification Numbers will be assigned by the sampling team sequentially in the order they are collected. The sample identifier format will be as follows:

SS-## where:

SS = Surface soil sample

RB = Rinsate blank

= Sequential number of field sample per matrix or QC sample type

The first surface soil sample will be SS-01.

7.3 Sampling Equipment and Decontamination

TechLaw will use dedicated, disposable sampling equipment where possible while collecting samples. Non-dedicated sampling equipment, if used, will be decontaminated between samples with an Alconox®/water solution and scrub brush followed by a thorough rinse with distilled water. Non-dedicated sampling equipment will also be decontaminated prior to use on the Site. If gross contamination is encountered, additional cleaning using an organic solvent such as isopropyl alcohol may be required, followed by an additional cycle of Alconox®/water wash and distilled water rinse. One rinsate sample will be collected each day for each non-dedicated equipment used to verify the effectiveness of the decontamination procedures.

7.4 Investigation-Derived Wastes

START field team members will make every effort to minimize the generation of investigation-derived wastes (IDW) throughout the field event. Disposable personal protective clothing and sampling equipment generated during field activities will be cleaned by physical removal of potentially contaminated soil, rendered unusable by tearing (when appropriate), bagged in opaque plastic garbage bags, and disposed of at a municipal landfill.

Other options for disposal of IDW are presented in EPA's *Guide to Management of Investigation-Derived Wastes*, EPA Publication 9345.3-03FS (January 1992).

8.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROCEDURES

8.1 Quality Control of Field Activities

The START Site Leader is responsible for ensuring that sample quality and integrity are maintained in accordance with the QA/QC Procedures and that the sample labeling and documentation is performed as described in Section 8.2 of this sampling plan.

8.2 Sample Documentation

All sample documentation will be completed legibly using indelible black ink. Any corrections or revisions will be made by drawing a single line through the incorrect entry and initialing and dating the error.

8.2.1 Field Logbook

START will document all pertinent Site information in field activity logbooks. The field logbook is a descriptive notebook detailing Site activities and observations so that an accurate account of field procedures can be reconstructed. All entries will be dated and signed by the individual making the entries and include (at a minimum) the following:

1. Site name and project number;
2. Name(s) of personnel on Site;
3. Dates and times of all entries (military time preferred);
4. Descriptions of all Site activities, including Site entry and exit times;
5. Noteworthy events and discussions;
6. Weather conditions;
7. Site observations;
8. Identification and description of samples and locations;
9. Subcontractor information and names of on-Site personnel;
10. Date and time of sample collections, along with chain of custody information;
11. Record of photographs; and
12. Site sketches.

8.2.2 Sample Labels/Tags

Sample labels and tags must clearly identify the particular sample. Required information for sample labels and tags is presented in *Contract Laboratory Program Guidance for Field Samplers*, EPA Publication 540-R-014-013, Final (October 2014) and is provided below.

Sample bottle labels must include the following information:

1. CLP or Regional Sample number, as applicable;
2. CLP Case No. or Regional DAS Case No.;
3. Preservative(s); and
4. Analysis/fraction.

Additional information may be included on the label, such as the Station Location (Sampler-assigned sample No.), date and time collected, etc.

Sample tags must include the following information:

1. CLP or Regional Sample number, as applicable;
2. CLP Case No. or Regional DAS Case No.;
3. Station No. and/or Station Location No. (assigned by sampler);
4. Date sample was collected (month, day, and year);
5. Time sample was collected (in military time);
6. Preservative, if any (specify "None" if sample is not preserved);
7. Type of sample (grab or composite);
8. Analysis/fraction requested;
9. Sampler's names/signature(s); and
10. EPA Tag No.

Sample labels will be securely affixed to the sample container. Tie-on sample tags will be properly secured around the neck of the container.

8.2.3 Chain of Custody Record

Proper chain of custody will be maintained from the time the sample is collected to its final deposition. Every transfer of custody will be noted and signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they will be stored in a locked container sealed with a Custody Seal.

START will use SCRIBE™ sample tracking software to prepare sample labels, tags, and chain of custody forms/traffic reports. The Chain of Custody record/EPA Traffic Report (COC/TR) will include (at minimum) the following information:

1. CLP or Regional Sample number, as applicable;
2. CLP Case No. or Regional DAS Case No.;
3. Sample matrices;

4. Concentration (*Note: Always specify "low concentration" for CLP samples unless directed otherwise by the project chemist or EPA analytical services coordinator, e.g., Client Services Team [CST])*;
5. Specify sample type (grab or composite);
6. Analyses requested;
7. Laboratory turnaround time (TAT) (*Note: This does not include the TAT for data validation. If preliminary results are required, this must be specified on the COC/TR*);
8. Regional specific tracking Nos. (EPA sample Tag Nos.) and No. of containers;
9. Preservative(s);
10. Station location identifier (sampler assigned sample No.);
11. Date and time sample collected;
12. Corresponding CLP organic or inorganic sample No. (if applicable).
13. Field QC information (identify trip/field/rinsate blanks only as "Field QC");
14. Specify samples to be used for laboratory QC (e.g., matrix spike [MS]/matrix spike duplicate [MSD]);
15. Name(s) and signature(s) of sampler(s);
16. Signature(s) of any individual(s) with control over samples;
17. Specify if shipment under the CLP or Regional DAS Case No. is complete (e.g., no additional sample shipments will be made under the case No.); and
18. Carrier, air bill No., and date of the shipment.

8.2.4 Custody seals

Custody seals will be used on all shipping containers used to ship samples. Custody Seals demonstrate that a container has not been tampered with or opened. The individual shipping the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

8.3 Sample Packaging, Storage, and Shipping

In accordance with *Contract Laboratory Program Guidance for Field Samplers*, EPA Publication 540-R-014-013, Final (October 2014), sample containers will be labeled and shipped with a label and sample tag affixed to each container. Samples will be placed in plastic zipping bags. Bagged containers will be placed in appropriate transport containers and the containers will be packed with appropriate absorbent material and bubble wrap.

All sample and COC/TR documents will be affixed to the underside of each transport container lid. The lid will be sealed with shipping tape and custody seals affixed to the transport container. Transport containers will be labeled with the origin and destination locations.

Regulations for packaging, marking, labeling, and shipping of hazardous materials and wastes are promulgated by the U.S. Department of Transportation (DOT). Air carriers which transport hazardous materials, in particular, Federal Express, require compliance with the current International Air Transport Association (IATA) Regulations, which apply to the shipment and transport of hazardous materials by air carrier. START will follow IATA regulations where applicable to ensure compliance.

8.4 Field QC Samples

Field QC samples will consist of field duplicate samples and possibly equipment rinsate blanks for trowels. One field duplicate will be collected for each matrix for every ten field samples collected, or one per batch. The field duplicate will test the reproducibility of sampling procedures and analytical procedures. One equipment rinsate sample will be collected each day for non-dedicated sampling equipment. Field QC samples will be documented in the field activities logbook and on the Regional copy of the COC/TR.

8.5 Laboratory QC

Laboratory QC will be in accordance with the method/CLP requirements. START will designate one sample per matrix in each batch/sample delivery group (SDG) submitted to the laboratory to be used for a MS/MSD. Note that EPA Region 3 does not require MS/MSDs for volatiles and semi-volatiles analyses. A batch/SDG is defined as up to 20 samples of a specific matrix submitted for a specific case or all the samples of a specific matrix (up to a maximum of 20) received by the laboratory for a specific case within a 7 calendar day period (3 calendar day period for 7 day TAT), with the period beginning with the receipt of the last sample in the SDG.

8.6 Data Validation

Analytical data generated under this SQAP will be validated in accordance with EPA CLP *National Functional Guidelines for Inorganic Superfund Data Review* (January 2017) at the Inorganic Level 2 (IM2). Validation for analytical services arranged through the EPA Region 3 CST will be accomplished by the Environmental Services Assistance Team (ESAT). Validation for analytical services provided by the EPA Region 3 OASQA Laboratory will be conducted in accordance with OASQA internal guidelines.

9.0 SCHEDULE OF ACTIVITIES

The schedule for the Site is undetermined at this time and is contingent upon gaining access to conduct sampling on properties located within the investigation area:

Task Description	Start Date	End Date
Mobilization to Site	TBD	TBD
Sample collection	TBD	TBD
Packaging and shipping samples	TBD	TBD
Demobilization from Site	TBD	TBD

10.0 DELIVERABLES

The following deliverables will be provided under this project:

- A Data Validation Report with lab results will be provided to the EPA OSC within approximately 45 days from receipt of the samples at the laboratory. The EPA ESAT will review and validate analytical data obtained through services arranged through the EPA CST and will prepare the Data Validation Report.
- TechLaw will prepare a trip report of sampling activities and analytical results within 30 days of receipt of the validated analytical data or as per OSC direction.

11.0 REFERENCES

CEC, 2015. Civil and Environmental Consultants, Inc. *Preliminary Investigation Report Corrective action Area VI Iron-Making And Corrective Action Area VII Steel-Making.* 4000 Triangle Lane, Suite 200 Export, PA 15632, May 2015.

EPA, 2014. *Contract Laboratory Program (CLP) Guidance for Field Samplers, Final*, Office of Solid Waste and Emergency Response (OSWER) publication EPA540-R-014-013, Washington, D.C. October, 2014.

EPA, 2019a. *Regional Screening Levels* for Resident Soil and Industrial Soil. November 2019: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

EPA, 2019b. *Regional Removal Management Levels* for Resident Soil and Industrial Soil. May 2019: https://www.epa.gov/risk/regional-removal-management-levels-chemicals-rmls

TABLES

TABLE 1
FIELD AND QC SAMPLING SUMMARY
Weirton BOP Implosion Site - Removal Assessment
Weirton, Hancock County, West Virginia

Parameter/Method	Matrix	Analytical Instrument / Detection Limit	Field Samples	Bkgd	QC Sample Summary					Total Field and QA/QC Analyses (not including MS/MSD)
					Dup	Trip Blanks	Field Blanks	Equip Blanks	MS/MSD	
Soil										
TAL ICP-AES Metals + Hg (CLP ISM02.4 ICP-AES)	Soil	ICP-AES/ CVAA CLP CRQL	20	3	2	-	-	2	2	27
Hexavalent Chromium SW846 3060A (digestion)/7199 or equivalent	Soil	Ion Chromatography/300 µg/kg	20	3	2	-	-	2	2	27
ACM										
Asbestos (EPA 600/5/93/116)	Soil	PLM/0.25% (400-point count)	20	3	2	-	-	-	-	25

Key:

Bkgd = Background
AES = Atomic Emission Spectroscopy
CLP = Contract Laboratory Program
CRQL = Contract Required Quantitation Limit
CVAA = Cold Vapor Atomic Absorption
Dup = Duplicate
Hg = mercury
ICP = Inductively Coupled Plasma
MS/MSD = Matrix Spike/Matrix Spike Duplicate
µg/kg = micrograms per kilogram
PLM = Polarized Light Microscopy
QA/QC = Quality Assurance/Quality Control
TAL = Target Analyte List

TABLE 2
SAMPLE ANALYTICAL REQUIREMENTS SUMMARY
Weirton BOP Implosion Site - Removal Assessment
Weirton, Hancock County, West Virginia

Parameter/Method	Matrix	Sample Preservation	Holding Time (Days)		Sample Container(s)					
					Qty	Vol		Bottle Type	QC	Comments
Soil										
TAL ICP-AES Metals + Hg (CLP ISM02.4 ICP-AES)	Soil	Ice, 4°C	180 28	Metals Hg	1	8	oz	CWM Glass Jar	-	Teflon-Lined Lids
Hexavalent Chromium SW846 3060A (digestion)/EPA 7199 or equivalent	Soil	Ice, 6°C	30 Days		1	4	oz	CWM Glass Jar	-	Teflon-Lined Lids
ACM										
Asbestos (EPA 600/5/93/116)	Soil	Ice, 4°C	None		1	8	oz	CWM Glass Jar	-	Teflon-Lined Lids
Field QC Blanks										
TAL ICP-AES Metals + Hg (CLP ISM02.4 ICP-AES)	Water	HNO_3 pH<2, Ice, 4°C	180 28	Metals Hg	1	1000	ml	HDPE	-	-
Hexavalent Chromium SW846 7199, EPA 218.6 or equivalent	Water	NH4OH/(NH4)2 SO4; pH 9.5	14		1	500	ml	HDPE	-	-

Key:

°C = degrees Celsius
CWM = Clear wide mouth
Hg = mercury
oz = ounce
QC = Quality Control
QTY = Quantity
Vol = Volume
CLP = Conctract Laboratory Program
ICP-AES = Inductively coupled plasma-atomic emission spectrometry

FIGURES

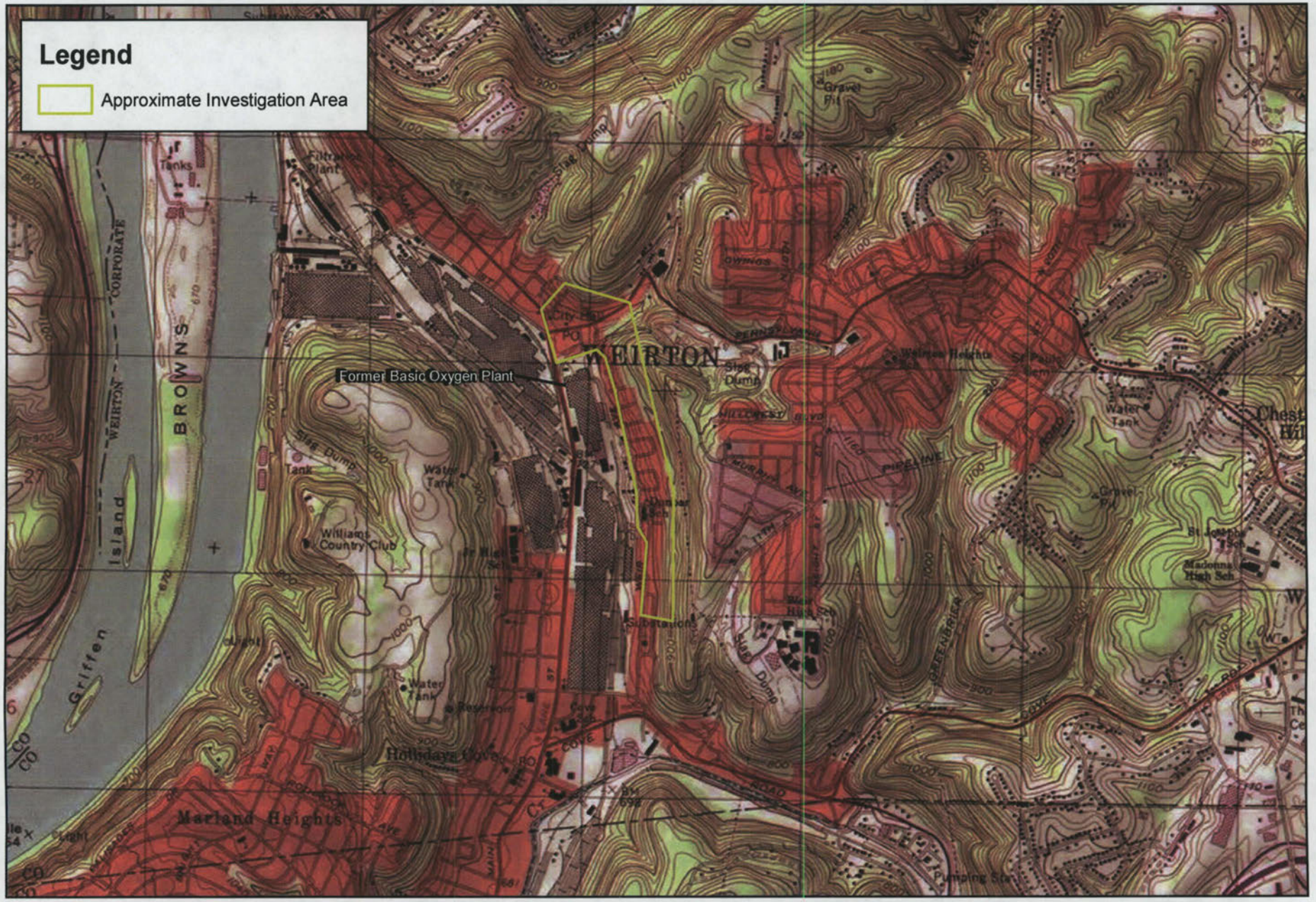

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Figure 1: Site Location Map
Weirton BOP Implosion Site
Weirton, West Virginia

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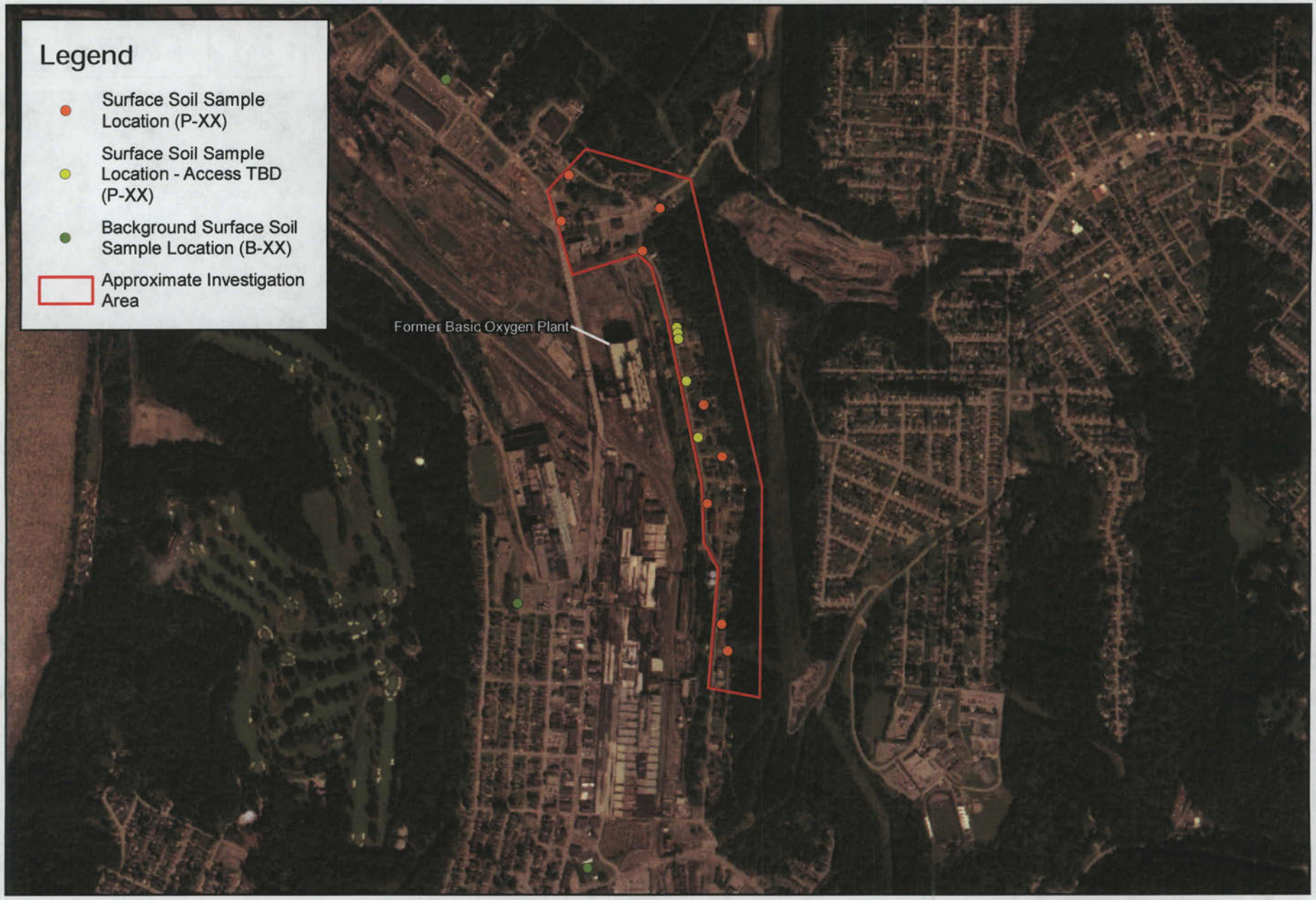
Figure 2: Site Aerial Map
Weirton BOP Implosion Site
Weirton, West Virginia

0 305 610 1,220 Feet
NAD 1983 - State Plane West Virginia North (ft)



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Contract No. EP-S3-15-03
TDD: T501-19-11-001

Figure 3: Sample Location Map
Weirton BOP Implosion Site
Weirton, West Virginia

0 445 890 1,780 Feet
NAD 1983 - State Plane West Virginia North (ft)

ATTACHMENT 1

1.0 ICP-AES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 1. ICP-AES TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A]

		CRQL			
Analyte Name	**CAS Number**	**Water[D] (µg/L)**	**Soil[B] (mg/kg)**	**Wipe (µg)**	**TCLP (mg/L)**
Aluminum	7429-90-5	200	20	20	--
Antimony	7440-36-0	60	6	6	--
Arsenic	7440-38-2	10	1	1	5
Barium	7440-39-3	200	20	20	100
Beryllium	7440-41-7	5	0.5	0.5	--
Cadmium	7440-43-9	5	0.5	0.5	1
Calcium	7440-70-2	5000	500	500	--
Chromium	7440-47-3	10	1	1	5
Cobalt	7440-48-4	50	5	5	--
Copper	7440-50-8	25	2.5	2.5	--
Iron	7439-89-6	100	10	10	--
Lead	7439-92-1	10	1	1	5
Magnesium	7439-95-4	5000	500	500	--
Manganese	7439-96-5	15	1.5	1.5	--
Nickel	7440-02-0	40	4	4	--
Potassium	7440-09-7	5000	500	500	--
Selenium	7782-49-2	35	3.5	3.5	1
Silver	7440-22-4	10	1	1	5
Sodium	7440-23-5	5000	500	500	--
Thallium	7440-28-0	25	2.5	2.5	--
Vanadium	7440-62-2	50	5	5	--
Zinc	7440-66-6	60	6	6	--
Hardness (total)	Hardness	33[C]	--	--	--

2.0 ICP-MS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 2. ICP-MS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[A]

Analyte Name	CAS Number	CRQL Water (µg/L)	CRQL Soil[B] (mg/kg)
Aluminum	7429-90-5	20	--
Antimony	7440-36-0	2	1
Arsenic	7440-38-2	1	0.5
Barium	7440-39-3	10	5
Beryllium	7440-41-7	1	0.5
Cadmium	7440-43-9	1	0.5
Calcium	7440-70-2	500	--
Chromium	7440-47-3	2	1
Cobalt	7440-48-4	1	0.5
Copper	7440-50-8	2	1
Iron	7439-89-6	200	--
Lead	7439-92-1	1	0.5
Magnesium	7439-95-4	500	--
Manganese	7439-96-5	1	0.5
Nickel	7440-02-0	1	0.5
Potassium	7440-09-7	500	--
Selenium	7782-49-2	5	2.5
Silver	7440-22-4	1	0.5
Sodium	7440-23-5	500	--
Thallium	7440-28-0	1	0.5
Vanadium	7440-62-2	5	2.5
Zinc	7440-66-6	2	1

3.0 MERCURY BY COLD VAPOR ATOMIC ABSORPTION TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 3. MERCURY BY COLD VAPOR ATOMIC ABSORPTION TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CAS Number	CRQL Water[D] (µg/L)	CRQL Soil[B] (mg/kg)	TCLP (mg/L)
Mercury	7439-97-6	0.2	0.1	0.2

4.0 CYANIDE BY SPECTROPHOTOMETRY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 4. CYANIDE BY SPECTROPHOTOMETRY TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CAS Number	CRQL Water[D] (µg/L)	CRQL Soil[B] (mg/kg)
Cyanide	57-12-5	10	0.5

Endnotes:

A. Changes to the Inorganic Target Analyte List (TAL) (e.g., adding an additional analyte) may be requested under the Modified Analysis clause in the contract.

B. The CRQLs for soil/sediment are based on 100% solids and on the minimum weights and volumes specified in Exhibit D. The moisture content of the samples must be used to adjust the CRQL values appropriately.

C. Hardness (total) is reported as a calculation in mg/L.

D. Use the water CRQLs for Synthetic Precipitation Leaching Procedure (SPLP).